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INVESTIGATION OF SKYLAB DATA

EREP No. 472-2

January 1975

NAS 9-13332

Principal Investigations Management Office

Lyndon B. Johnson Space Center

Clayton Forbes

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Monthly Plans and Progress Report

Contract NAS 9-13332

Monthly Plans and Progress Report

January 1975

We ascertained that the S-192 data products were of the highest quality that we could obtain.

Progress on data processing continues. The pace is slow because of the noise. For example, it was not possible to determine field boundaries on graymaps. Fields will now be located by a semiautomatic procedure using the Bendix DATA GRID system.

A detailed report of S-192 processing is attached.

There were extensive discussions with the subcontractor regarding cost estimates and products needed as a result of S-192 processing.

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Skylab Support
Progress Report, January 1975

Subcontract #1 Prime NAS9-13332

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Skylab Support
Progress Report, January, 1975

The following report serves to report progress for January 1975 on Subcontract #1 of contract NAS9-13332. The financial reports for this contract are be. , submitted under separate cover.

The objective f this subcontract is to support the Skylab EREP effort of Michigan State University by: 1) performing standard recognition processing and p: ducing recognition maps and area counts, 2) assisting in the ana ysis and interpretation of the recognition maps and other extracted inf rmation, 3) further developing and adapting, for use on Skylab EREP data, methods for estimating proportions of unresolved objects, and 4) applying proportion estimation techniques to one frame of EREP data to determine to what extent the accuracy of crop acreage estimates is improved.

Twin processing efforts continued during January on the SKYLAB S-192 multispectral scanner data and the aircraft M-7 multispectral scanner data.

The work on the SKYLAB data continued the data quality analysis and began the effort to locate training and test areas.

As regards the former, nothing was found to change the preliminary conclusions regarding signal-to-noise problems reported last month. In response to our request for conic data, we promptly received a data tape which, unfortunately, did not include the requested area. We re-requested the correct area in conic data format.

We proceeded to the job of locating fields and other geographical features. Graymaps of several of the bands displayed good contrast and homogeneous areas were clearly evident. However, upon class inspection it was not possible to accurately find many of the boundaries between fields; additionally it was not possible to discern other geographic features, e.g., roads, so that we could not accurately match our ground information with the graymap.

It was therefore decided that we should go about the business of location of fields by a semi-automatic procedure where all points of interest, section corners, field corners, etc. are located on large scale photography and the (x,y) coordinates of these points are calculated. We

have access to an automated method of doing this, the Bendix DATA GRID System which efficiently digitizes coordinates of points where a cursor has been momentarily positioned.

After some study, it was decided to use large scale black-and-white enlargements imagery acquired by the U-2 overflights in mid August, 1973. Two frames will have to be used to cover the whole of the test area.

Obviously, to employ such a system, it is necessary to provide a mechanism to transform photographic (x,y) coordinates into scan line, scan point coordinates. This is done by using control points, i.e., specific points in the photograph which can be found in the graymaps. Being unable to find such obvious control points as roads or road intersections, it was decided to use bodies of water as control points. A comparison of signatures for a deep water lake and general vegetative area showed a large separation of signals in SDO's 17 and 19. So, we performed a two channel quadratic classification for water; all points so classified were indicated on a graymap. These points were compared to U-2 and S-190A false color IR imagery to ascertain their precise place in the scene. Finally, these points were located on the enlarged U-2 photos.

In this manner we have completed the spotting of all points and fields in one of the U-2 photos. We plan to digitize this photo before proceeding with the second photo.

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